

We claim:

1. Surface-modified zinc oxides, characterized in that they have the following physico-chemical characteristic data:

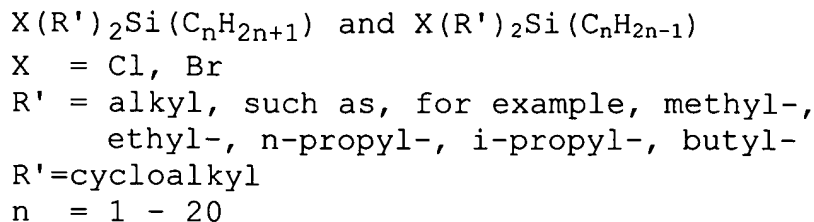
BET surface areas:  $18 \pm 5 \text{ m}^2/\text{g}$

C content: 0.5 to 1.0 wt. %

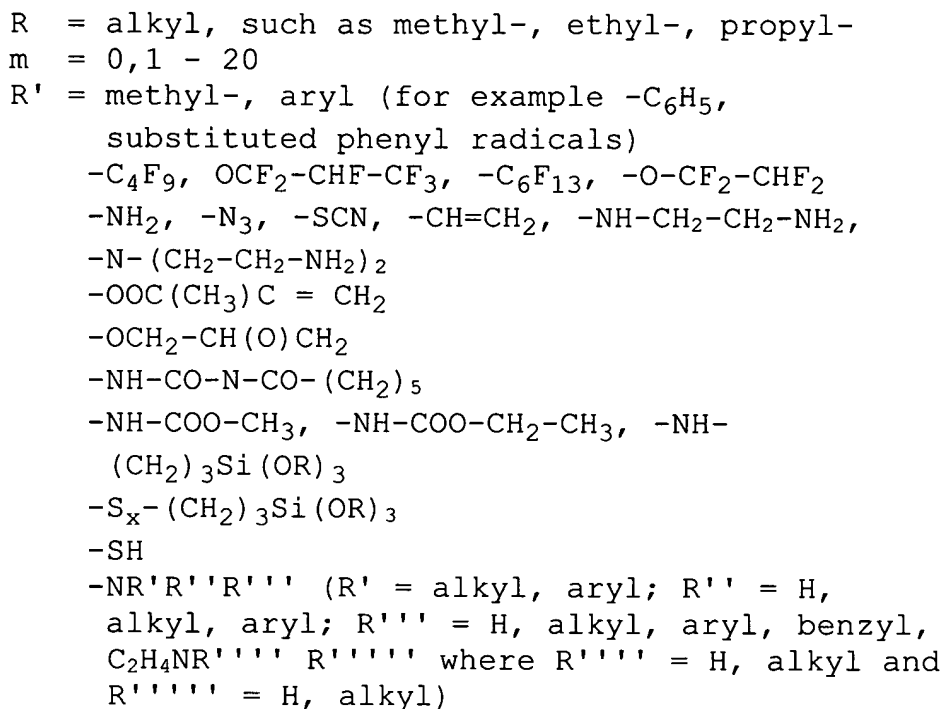
2. Surface-modified zinc oxide according to Claim 1, which has been surface modified with a member selected from the group consisting of:

- a) Organosilanes of the type  $(\text{RO})_3\text{Si}(\text{C}_n\text{H}_{2n+1})$  and  $\text{RO})_3\text{Si}(\text{C}_n\text{H}_{2n-1})$   
R = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
n = 1 - 20
- b) Organosilanes of the type  $\text{R}'_x(\text{RO})_y\text{Si}(\text{C}_n\text{H}_{2n+1})$  and  $\text{R}'_x(\text{RO})_y\text{Si}(\text{C}_n\text{H}_{2n-1})$   
R = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
R' = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
R' = cycloalkyl  
n = 1 - 20  
x + y = 3  
x = 1, 2  
y = 1, 2
- c) Halogeno-organosilanes of the type  $\text{X}_3\text{Si}(\text{C}_n\text{H}_{2n+1})$  and  $\text{X}_3\text{Si}(\text{C}_n\text{H}_{2n-1})$   
X = Cl, Br  
n = 1 - 20
- d) Halogeno-organosilanes of the type  $\text{X}_2(\text{R}')\text{Si}(\text{C}_n\text{H}_{2n+1})$  and  $\text{X}_2(\text{R}')\text{Si}(\text{C}_n\text{H}_{2n-1})$   
X = Cl, Br  
R' = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
R' = cycloalkyl  
n = 1 - 20

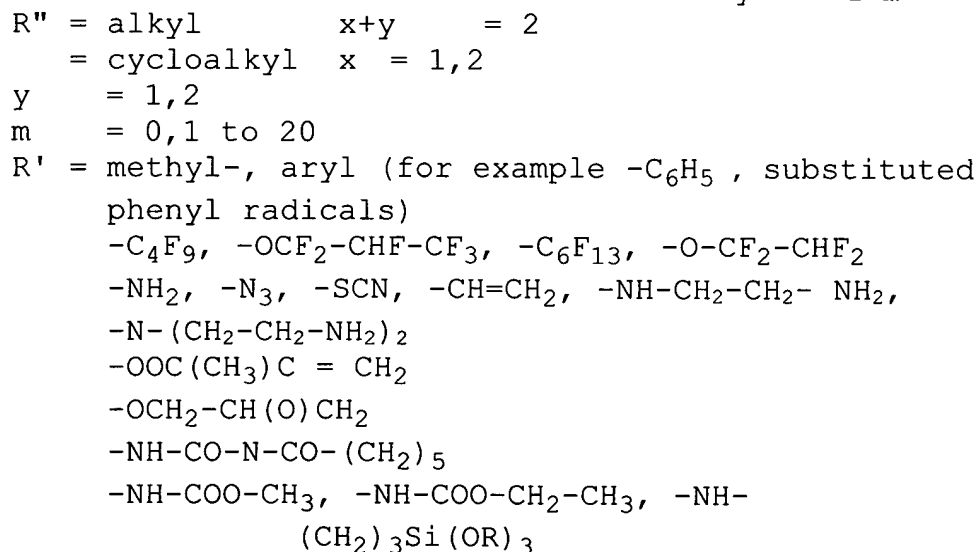
e) Halogeno-organosilanes of the type



f) Organosilanes of the type  $(RO)_3Si(CH_2)_m-R'$



g) Organosilanes of the type  $(R'')_x(RO)_ySi(CH_2)_m-R'$



$-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$   
 $-\text{SH}$   
 $-\text{NR}'\text{R}''\text{R}'''$  ( $\text{R}' = \text{alkyl, aryl}$ ;  $\text{R}'' = \text{H, alkyl, aryl}$ ;  $\text{R}''' = \text{H, alkyl, aryl, benzyl}$ ,  
 $\text{C}_2\text{H}_4\text{NR}''''$   $\text{R}''''$  where  $\text{R}'''' = \text{H, alkyl}$   
 and  $\text{R}'''' = \text{H, alkyl}$ )

h) Halogeno-organosilanes of the type  $\text{X}_3\text{Si}(\text{CH}_2)_m-\text{R}'$

$\text{X} = \text{Cl, Br}$

$m = 0, 1 - 20$

$\text{R}' = \text{methyl-, aryl (for example } -\text{C}_6\text{H}_5, \text{ substituted phenyl radicals)}$

$-\text{C}_4\text{F}_9, -\text{OCF}_2-\text{CHF}-\text{CF}_3, -\text{C}_6\text{F}_{13}, -\text{O}-\text{CF}_2-\text{CHF}_2$

$-\text{NH}_2, -\text{N}_3, -\text{SCN}, -\text{CH}=\text{CH}_2,$

$-\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2$

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$

$-\text{OOC}(\text{CH}_3)\text{C} = \text{CH}_2$

$-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$

$-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$

$-\text{NH}-\text{COO}-\text{CH}_3, -\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3, -\text{NH}-(\text{CH}_2)_3\text{Si}(\text{OR})_3$

$-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$

$-\text{SH}$

i) Halogeno-organosilanes of the type  $(\text{R})\text{X}_2\text{Si}(\text{CH}_2)_m-\text{R}'$

$\text{X} = \text{Cl, Br}$

$\text{R} = \text{alkyl, such as methyl-, ethyl-, propyl-}$

$m = 0, 1 - 20$

$\text{R}' = \text{methyl-, aryl (e.g. } -\text{C}_6\text{H}_5, \text{ substituted phenyl radicals)}$

$-\text{C}_4\text{F}_9, -\text{OCF}_2-\text{CHF}-\text{CF}_3, -\text{C}_6\text{F}_{13}, -\text{O}-\text{CF}_2-\text{CHF}_2$

$-\text{NH}_2, -\text{N}_3, -\text{SCN}, -\text{CH}=\text{CH}_2, -\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2,$

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$

$-\text{OOC}(\text{CH}_3)\text{C} = \text{CH}_2$

$-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$

$-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$

$-\text{NH}-\text{COO}-\text{CH}_3, -\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3, -\text{NH}-(\text{CH}_2)_3\text{Si}(\text{OR})_3,$

wherein  $\text{R}$  can be methyl-, ethyl-, propyl-,

butyl-

$-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$ , wherein  $\text{R}$  can be methyl-, ethyl-, propyl-, butyl-

$-\text{SH}$

j) Halogeno-organosilanes of the type  $(R)_2X Si(CH_2)_m-R'$

X = Cl, Br

R = alkyl

m = 0, 1 - 20

R' = methyl-, aryl (e.g.  $-C_6H_5$ , substituted phenyl radicals)

$-C_4F_9$ ,  $-OCF_2-CHF-CF_3$ ,  $-C_6F_{13}$ ,  $-O-CF_2-CHF_2$

$-NH_2$ ,  $-N_3$ ,  $-SCN$ ,  $-CH=CH_2$ ,  $-NH-CH_2-CH_2-NH_2$

$-N-(CH_2-CH_2-NH_2)_2$

$-OOC(CH_3)C=CH_2$

$-OCH_2-CH(O)CH_2$

$-NH-CO-N-CO-(CH_2)_5$

$-NH-COO-CH_3$ ,  $-NH-COO-CH_2-CH_3$ ,  $-NH-$

$(CH_2)_3Si(OR)_3$

$-S_x-(CH_2)_3Si(OR)_3$

$-SH$

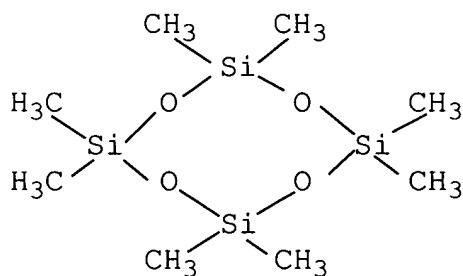
k) Silazanes of the type  $R'R_2Si-N-SiR_2R'$

|  
H

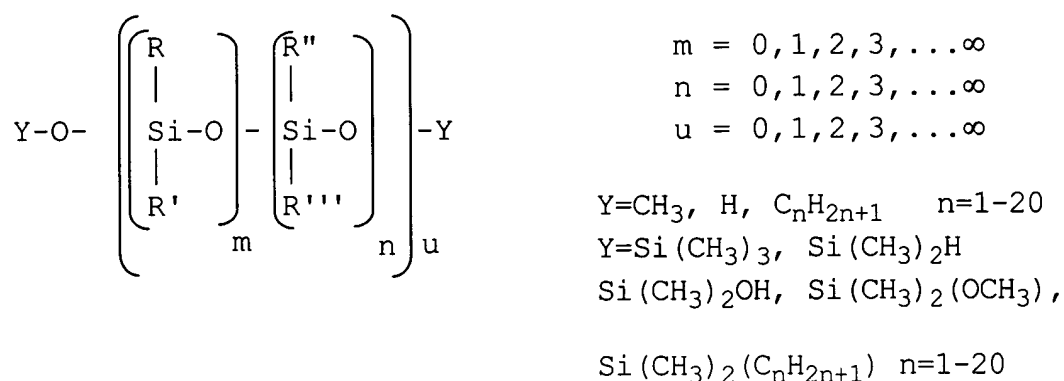
R = alkyl, vinyl, aryl

R' = alkyl, vinyl, aryl

l) Cyclic polysiloxanes of the type D 3, D 4, D 5, wherein D 3, D 4 and D 5 are understood as cyclic polysiloxanes with 3, 4 or 5 units of the type  $-O-Si(CH_3)_2-$ . E.g. octamethylcyclotetrasiloxane = D 4



m) Polysiloxanes or silicone oils of the type



- R = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl und substituted phenyl radicals,  $(CH_2)_n-NH_2, H$
- R' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl- and substituted phenyl radicals,  $(CH_2)_n-NH_2, H$
- R'' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl- and substituted phenyl radicals,  $(CH_2)_n-NH_2, H$
- R''' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl und substituted phenyl radicals,  $(CH_2)_n-NH_2, H$

3. A process for the preparation of the surface-modified zinc oxide according to claim 1, comprising optionally spraying a zinc oxide with water, spraying a surface-modifying agent at room temperature to obtain a zinc oxide sprayed with said surface-modifying agent, heat treating said zinc oxide at a temperature of  $50$  to  $400^\circ C$  over a period of  $1$  to  $6$  hours to thereby obtain a surface-modified zinc oxide.

4. The process according to Claim 3, wherein the surface-modifying agent is a member selected from the group consisting of:

- a) Organosilanes of the type  $(RO)_3Si(C_nH_{2n+1})$  and  $RO)_3Si(C_nH_{2n-1})$   
 $R$  = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
 $n = 1 - 20$
- b) Organosilanes of the type  $R'_x(RO)_ySi(C_nH_{2n+1})$  and  $R'_x(RO)_ySi(C_nH_{2n-1})$   
 $R$  = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
 $R'$  = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
 $R'$ =cycloalkyl  
 $n = 1 - 20$   
 $x+y = 3$   
 $x = 1, 2$   
 $y = 1, 2$
- c) Halogeno-organosilanes of the type  $X_3Si(C_nH_{2n+1})$  and  $X_3Si(C_nH_{2n-1})$   
 $X = Cl, Br$   
 $n = 1 - 20$
- d) Halogeno-organosilanes of the type  $X_2(R')Si(C_nH_{2n+1})$  and  $X_2(R')Si(C_nH_{2n-1})$   
 $X = Cl, Br$   
 $R'$  = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
 $R'$ =cycloalkyl  
 $n = 1 - 20$
- e) Halogeno-organosilanes of the type  
 $X(R')_2Si(C_nH_{2n+1})$  and  $X(R')_2Si(C_nH_{2n-1})$   
 $X = Cl, Br$   
 $R'$  = alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-  
 $R'$ =cycloalkyl  
 $n = 1 - 20$
- f) Organosilanes of the type  $(RO)_3Si(CH_2)_m-R'$   
 $R$  = alkyl, such as methyl-, ethyl-, propyl-  
 $m = 0, 1 - 20$   
 $R'$  = methyl-, aryl (for example  $-C_6H_5$ ,

- substituted phenyl radicals)  
 $-C_4F_9$ ,  $-OCF_2-CHF-CF_3$ ,  $-C_6F_{13}$ ,  $-O-CF_2-CHF_2$   
 $-NH_2$ ,  $-N_3$ ,  $-SCN$ ,  $-CH=CH_2$ ,  $-NH-CH_2-CH_2-NH_2$ ,  
 $-N-(CH_2-CH_2-NH_2)_2$   
 $-OOC(CH_3)C = CH_2$   
 $-OCH_2-CH(O)CH_2$   
 $-NH-CO-N-CO-(CH_2)_5$   
 $-NH-COO-CH_3$ ,  $-NH-COO-CH_2-CH_3$ ,  $-NH-$   
 $(CH_2)_3Si(OR)_3$   
 $-S_x-(CH_2)_3Si(OR)_3$   
 $-SH$   
 $-NR'R''R'''$  ( $R' = \text{alkyl, aryl}$ ;  $R'' = H$ ,  
 $\text{alkyl, aryl}$ ;  $R''' = H$ ,  $\text{alkyl, aryl, benzyl}$ ,  
 $C_2H_4NR''''R'''''$  where  $R'''' = H$ ,  $\text{alkyl}$  and  
 $R''''' = H$ ,  $\text{alkyl}$ )
- g) Organosilanes of the type  $(R'')_x(RO)_ySi(CH_2)_m-R'$   
 $R'' = \text{alkyl} \quad x+y = 2$   
 $= \text{cycloalkyl} \quad x = 1,2$   
 $y = 1,2$   
 $m = 0,1 \text{ to } 20$   
 $R' = \text{methyl-}, \text{aryl}$  (for example  $-C_6H_5$ , substituted  
phenyl radicals)  
 $-C_4F_9$ ,  $-OCF_2-CHF-CF_3$ ,  $-C_6F_{13}$ ,  $-O-CF_2-CHF_2$   
 $-NH_2$ ,  $-N_3$ ,  $-SCN$ ,  $-CH=CH_2$ ,  $-NH-CH_2-CH_2-NH_2$ ,  
 $-N-(CH_2-CH_2-NH_2)_2$   
 $-OOC(CH_3)C = CH_2$   
 $-OCH_2-CH(O)CH_2$   
 $-NH-CO-N-CO-(CH_2)_5$   
 $-NH-COO-CH_3$ ,  $-NH-COO-CH_2-CH_3$ ,  $-NH-$   
 $(CH_2)_3Si(OR)_3$   
 $-S_x-(CH_2)_3Si(OR)_3$   
 $-SH$   
 $-NR'R''R'''$  ( $R' = \text{alkyl, aryl}$ ;  $R'' = H$ ,  
 $\text{alkyl, aryl}$ ;  $R''' = H$ ,  $\text{alkyl, aryl, benzyl}$ ,  
 $C_2H_4NR''''R'''''$  where  $R'''' = H$ ,  $\text{alkyl}$   
and  $R''''' = H$ ,  $\text{alkyl}$ )
- h) Halogeno-organosilanes of the type  $X_3Si(CH_2)_m-R'$   
 $X = Cl, Br$   
 $m = 0,1 - 20$   
 $R' = \text{methyl-}, \text{aryl}$  (for example  $-C_6H_5$ , substituted  
phenyl radicals)  
 $-C_4F_9$ ,  $-OCF_2-CHF-CF_3$ ,  $-C_6F_{13}$ ,  $-O-CF_2-CHF_2$

$-\text{NH}_2$ ,  $-\text{N}_3$ ,  $-\text{SCN}$ ,  $-\text{CH}=\text{CH}_2$ ,  
 $-\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2$   
 $-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$   
 $-\text{OOC}(\text{CH}_3)\text{C}=\text{CH}_2$   
 $-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$   
 $-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$   
 $-\text{NH}-\text{COO}-\text{CH}_3$ ,  $-\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3$ ,  $-\text{NH}-(\text{CH}_2)_3\text{Si}(\text{OR})_3$   
 $-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$   
 $-\text{SH}$

i) Halogeno-organosilanes of the type  $(\text{R})\text{X}_2\text{Si}(\text{CH}_2)_m-\text{R}'$

X = Cl, Br

R = alkyl, such as methyl-, ethyl-, propyl-

m = 0, 1 - 20

R' = methyl-, aryl (e.g.  $-\text{C}_6\text{H}_5$ , substituted phenyl radicals)

$-\text{C}_4\text{F}_9$ ,  $-\text{OCF}_2-\text{CHF}-\text{CF}_3$ ,  $-\text{C}_6\text{F}_{13}$ ,  $-\text{O}-\text{CF}_2-\text{CHF}_2$

$-\text{NH}_2$ ,  $-\text{N}_3$ ,  $-\text{SCN}$ ,  $-\text{CH}=\text{CH}_2$ ,  $-\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2$ ,

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$

$-\text{OOC}(\text{CH}_3)\text{C}=\text{CH}_2$

$-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$

$-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$

$-\text{NH}-\text{COO}-\text{CH}_3$ ,  $-\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3$ ,  $-\text{NH}-(\text{CH}_2)_3\text{Si}(\text{OR})_3$ ,

wherein R can be methyl-, ethyl-, propyl-,

butyl-

$-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$ , wherein R can be methyl-,

ethyl-, propyl-, butyl-

$-\text{SH}$

j) Halogeno-organosilanes of the type  $(\text{R})_2\text{X Si}(\text{CH}_2)_m-\text{R}'$

X = Cl, Br

R = alkyl

m = 0, 1 - 20

R' = methyl-, aryl (e.g.  $-\text{C}_6\text{H}_5$ , substituted phenyl radicals)

$-\text{C}_4\text{F}_9$ ,  $-\text{OCF}_2-\text{CHF}-\text{CF}_3$ ,  $-\text{C}_6\text{F}_{13}$ ,  $-\text{O}-\text{CF}_2-\text{CHF}_2$

$-\text{NH}_2$ ,  $-\text{N}_3$ ,  $-\text{SCN}$ ,  $-\text{CH}=\text{CH}_2$ ,  $-\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2$

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$

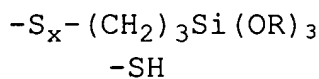
$-\text{OOC}(\text{CH}_3)\text{C}=\text{CH}_2$

$-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$

$-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$

$-\text{NH}-\text{COO}-\text{CH}_3$ ,  $-\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3$ ,  $-\text{NH}-(\text{CH}_2)_3\text{Si}(\text{OR})_3$





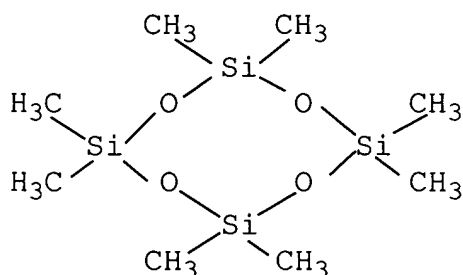
k) Silazanes of the type  $R'_2Si-N-SiR_2R'$



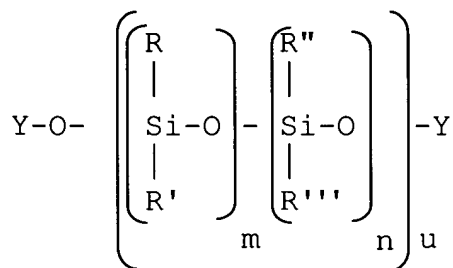
R = alkyl, vinyl, aryl

R' = alkyl, vinyl, aryl

l) Cyclic polysiloxanes of the type D 3, D 4, D 5, wherein D 3, D 4 and D 5 are understood as cyclic polysiloxanes with 3, 4 or 5 units of the type  $-O-Si(CH_3)_2-$ . E.g. octamethylcyclotetrasiloxane = D 4



m) Polysiloxanes or silicone oils of the type



$$m = 0, 1, 2, 3, \dots \infty$$

$$n = 0, 1, 2, 3, \dots \infty$$

$$u = 0, 1, 2, 3, \dots \infty$$

$$Y=CH_3, H, C_nH_{2n+1} \quad n=1-20$$

$$Y=Si(CH_3)_3, Si(CH_3)_2H$$

$$Si(CH_3)_2OH, Si(CH_3)_2(OCH_3),$$

$$Si(CH_3)_2(C_nH_{2n+1}) \quad n=1-20$$

R = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl und substituted phenyl radicals,  $(CH_2)_n-NH_2$ , H

R' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl- and substituted phenyl radicals,  $(CH_2)_n-NH_2$ , H

R'' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl- and substituted phenyl radicals,

$(CH_2)_n-NH_2$ , H  
 $R''' = \text{alkyl, such as } C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl,  
 such as phenyl und substituted phenyl radicals,  
 $(CH_2)_n-NH_2$ , H

5. A process for the preparation of the surface-modified zinc oxides according to Claim 1, comprising optionally spraying zinc oxide with water, treating said zinc oxide with a surface-modifying agent in vapour form and then heat-treating the resulting zinc oxide at a temperature of  $50$  to  $800^\circ C$  over a period of  $0.5$  to  $6$  hours to thereby obtain a surface-modified zinc oxide.

6. The process according to Claim 5, wherein the surface-modifying agent is a member selected from the group consisting of:

- a) Organosilanes of the type  $(RO)_3Si(C_nH_{2n+1})$  and  $RO)_3Si(C_nH_{2n-1})$   
 $R = \text{alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-}$   
 $n = 1 - 20$
- b) Organosilanes of the type  $R'_x(RO)_ySi(C_nH_{2n+1})$  and  $R'_x(RO)_ySi(C_nH_{2n-1})$   
 $R = \text{alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-}$   
 $R' = \text{alkyl, such as, for example, methyl-, ethyl-, n-propyl-, i-propyl-, butyl-}$   
 $R' = \text{cycloalkyl}$   
 $n = 1 - 20$   
 $x+y = 3$   
 $x = 1, 2$   
 $y = 1, 2$
- c) Halogeno-organosilanes of the type  $X_3Si(C_nH_{2n+1})$  and  $X_3Si(C_nH_{2n-1})$   
 $X = Cl, Br$   
 $n = 1 - 20$

d) Halogeno-organosilanes of the type  $X_2(R')Si(C_nH_{2n+1})$   
 and  $X_2(R')Si(C_nH_{2n-1})$   
 $X = Cl, Br$   
 $R' = \text{alkyl, such as, for example, methyl-, ethyl-,}$   
 $n\text{-propyl-, i-propyl-, butyl-}$   
 $R' = \text{cycloalkyl}$   
 $n = 1 - 20$

e) Halogeno-organosilanes of the type

$X(R')_2Si(C_nH_{2n+1})$  and  $X(R')_2Si(C_nH_{2n-1})$   
 $X = Cl, Br$   
 $R' = \text{alkyl, such as, for example, methyl-,}$   
 $\text{ethyl-, n-propyl-, i-propyl-, butyl-}$   
 $R' = \text{cycloalkyl}$   
 $n = 1 - 20$

f) Organosilanes of the type  $(RO)_3Si(CH_2)_m-R'$

$R = \text{alkyl, such as methyl-, ethyl-, propyl-}$   
 $m = 0, 1 - 20$   
 $R' = \text{methyl-, aryl (for example } -C_6H_5,$   
 $\text{substituted phenyl radicals)}$   
 $-C_4F_9, OCF_2-CHF-CF_3, -C_6F_{13}, -O-CF_2-CHF_2$   
 $-NH_2, -N_3, -SCN, -CH=CH_2, -NH-CH_2-CH_2-NH_2,$   
 $-N-(CH_2-CH_2-NH_2)_2$   
 $-OOC(CH_3)C=CH_2$   
 $-OCH_2-CH(O)CH_2$   
 $-NH-CO-N-CO-(CH_2)_5$   
 $-NH-COO-CH_3, -NH-COO-CH_2-CH_3, -NH-$   
 $(CH_2)_3Si(OR)_3$   
 $-S_x-(CH_2)_3Si(OR)_3$   
 $-SH$   
 $-NR'R''R'''$  ( $R' = \text{alkyl, aryl; } R'' = H,$   
 $\text{alkyl, aryl; } R''' = H, \text{ alkyl, aryl, benzyl,}$   
 $C_2H_4NR''''$   $R''''$  where  $R'''' = H, \text{ alkyl and}$   
 $R'''' = H, \text{ alkyl})$

g) Organosilanes of the type  $(R'')_x(RO)_ySi(CH_2)_m-R'$

$R'' = \text{alkyl}$   $x+y = 2$   
 $= \text{cycloalkyl}$   $x = 1, 2$   
 $y = 1, 2$   
 $m = 0, 1 \text{ to } 20$   
 $R' = \text{methyl-, aryl (for example } -C_6H_5, \text{ substituted}$   
 $\text{phenyl radicals)}$   
 $-C_4F_9, -OCF_2-CHF-CF_3, -C_6F_{13}, -O-CF_2-CHF_2$   
 $-NH_2, -N_3, -SCN, -CH=CH_2, -NH-CH_2-CH_2-NH_2,$

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$   
 $-\text{OOC}(\text{CH}_3)\text{C}=\text{CH}_2$   
 $-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$   
 $-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$   
 $-\text{NH}-\text{COO}-\text{CH}_3, -\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3, -\text{NH}-$   
 $(\text{CH}_2)_3\text{Si}(\text{OR})_3$   
 $-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$   
 $-\text{SH}$   
 $-\text{NR}'\text{R}''\text{R}'''$  ( $\text{R}' = \text{alkyl, aryl}; \text{R}'' = \text{H, alkyl, aryl}; \text{R}''' = \text{H, alkyl, aryl, benzyl,}$   
 $\text{C}_2\text{H}_4\text{NR}''''\text{R}'''''$  where  $\text{R}'''' = \text{H, alkyl}$   
 and  $\text{R}''''' = \text{H, alkyl}$ )

h) Halogeno-organosilanes of the type  $\text{X}_3\text{Si}(\text{CH}_2)_m-\text{R}'$

$\text{X} = \text{Cl, Br}$

$m = 0, 1 - 20$

$\text{R}' = \text{methyl-, aryl (for example } -\text{C}_6\text{H}_5, \text{ substituted phenyl radicals)}$

$-\text{C}_4\text{F}_9, -\text{OCF}_2-\text{CHF}-\text{CF}_3, -\text{C}_6\text{F}_{13}, -\text{O}-\text{CF}_2-\text{CHF}_2$

$-\text{NH}_2, -\text{N}_3, -\text{SCN}, -\text{CH}=\text{CH}_2,$

$-\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2$

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$

$-\text{OOC}(\text{CH}_3)\text{C}=\text{CH}_2$

$-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$

$-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$

$-\text{NH}-\text{COO}-\text{CH}_3, -\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3, -\text{NH}-$

$(\text{CH}_2)_3\text{Si}(\text{OR})_3$

$-\text{S}_x-(\text{CH}_2)_3\text{Si}(\text{OR})_3$

$-\text{SH}$

i) Halogeno-organosilanes of the type  $(\text{R})\text{X}_2\text{Si}(\text{CH}_2)_m-\text{R}'$

$\text{X} = \text{Cl, Br}$

$\text{R} = \text{alkyl, such as methyl-, ethyl-, propyl-}$

$m = 0, 1 - 20$

$\text{R}' = \text{methyl-, aryl (e.g. } -\text{C}_6\text{H}_5, \text{ substituted phenyl radicals)}$

$-\text{C}_4\text{F}_9, -\text{OCF}_2-\text{CHF}-\text{CF}_3, -\text{C}_6\text{F}_{13}, -\text{O}-\text{CF}_2-\text{CHF}_2$

$-\text{NH}_2, -\text{N}_3, -\text{SCN}, -\text{CH}=\text{CH}_2, -\text{NH}-\text{CH}_2-\text{CH}_2-\text{NH}_2,$

$-\text{N}-(\text{CH}_2-\text{CH}_2-\text{NH}_2)_2$

$-\text{OOC}(\text{CH}_3)\text{C}=\text{CH}_2$

$-\text{OCH}_2-\text{CH}(\text{O})\text{CH}_2$

$-\text{NH}-\text{CO}-\text{N}-\text{CO}-(\text{CH}_2)_5$

$-\text{NH}-\text{COO}-\text{CH}_3, -\text{NH}-\text{COO}-\text{CH}_2-\text{CH}_3, -\text{NH}-(\text{CH}_2)_3\text{Si}(\text{OR})_3,$

wherein R can be methyl-, ethyl-, propyl-, butyl-  
 $-S_x-(CH_2)_3Si(OR)_3$ , wherein R can be methyl-, ethyl-, propyl-, butyl-  
 $-SH$

j) Halogeno-organosilanes of the type  $(R)_2X Si(CH_2)_m-R'$

X = Cl, Br

R = alkyl

m = 0, 1 - 20

R' = methyl-, aryl (e.g.  $-C_6H_5$ , substituted phenyl radicals)

$-C_4F_9$ ,  $-OCF_2-CHF-CF_3$ ,  $-C_6F_{13}$ ,  $-O-CF_2-CHF_2$

$-NH_2$ ,  $-N_3$ ,  $-SCN$ ,  $-CH=CH_2$ ,  $-NH-CH_2-CH_2-NH_2$

$-N-(CH_2-CH_2-NH_2)_2$

$-OOC(CH_3)C=CH_2$

$-OCH_2-CH(O)CH_2$

$-NH-CO-N-CO-(CH_2)_5$

$-NH-COO-CH_3$ ,  $-NH-COO-CH_2-CH_3$ ,  $-NH-$

$(CH_2)_3Si(OR)_3$

$-S_x-(CH_2)_3Si(OR)_3$

$-SH$

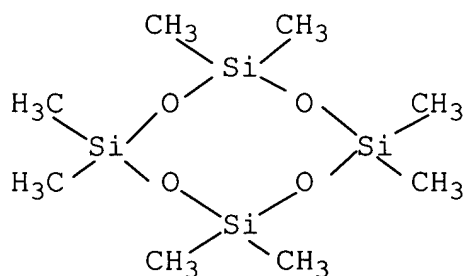
k) Silazanes of the type  $R'_2Si-N-SiR_2R'$

|  
H

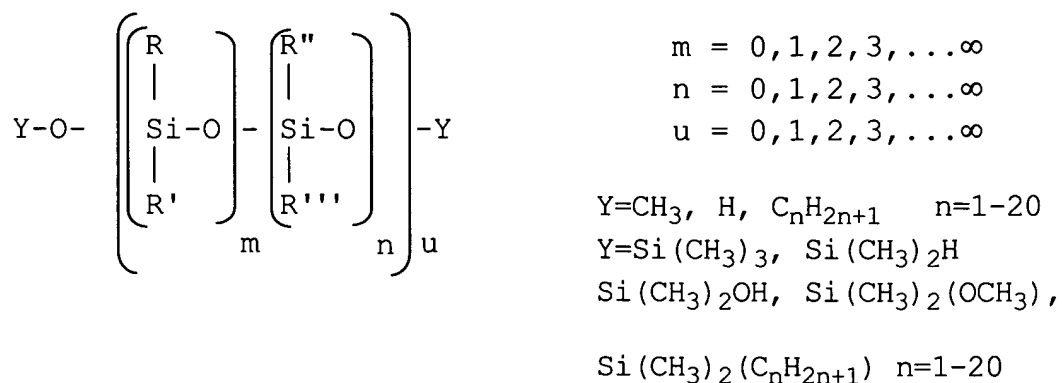
R = alkyl, vinyl, aryl

R' = alkyl, vinyl, aryl

l) Cyclic polysiloxanes of the type D 3, D 4, D 5, wherein D 3, D 4 and D 5 are understood as cyclic polysiloxanes with 3, 4 or 5 units of the type  $-O-Si(CH_3)_2-$ . E.g. octamethylcyclotetrasiloxane = D 4



m) Polysiloxanes or silicone oils of the type



R = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl und substituted phenyl radicals,  $(CH_2)_n-NH_2, H$

R' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl- and substituted phenyl radicals,  $(CH_2)_n-NH_2, H$

R'' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl- and substituted phenyl radicals,  $(CH_2)_n-NH_2, H$

R''' = alkyl, such as  $C_nH_{2n+1}$ , wherein  $n = 1$  to  $20$ , aryl, such as phenyl und substituted phenyl radicals,  $(CH_2)_n-NH_2, H$

7. A cosmetic preparation comprising a dermatologically acceptable carrier and the surface-modified zinc oxide of Claim 1.

8. A cosmetic preparation comprising a dermatologically acceptable carrier and the surface-modified zinc oxide of Claim 2.

9. A sunscreen preparation comprising a dermatologically acceptable carrier and the surface modified zinc oxide of Claim 1.

10. A sunscreen preparation comprising a dermatologically acceptable carrier and the surface modified zinc oxide of Claim 2.

11. The sunscreen preparation according to Claim 9, wherein the dermatologically acceptable carrier is a member selected from the group consisting of octocrylene, ethylhexyl methoxycinnamate, phenylbenzimidazole sulfoinc acid, and bis-ethylhexyloxy methoxyphenyl triazine.